



FREQUENTLY ASKED QUESTIONS ABOUT RADON

What is radon?

Radon is a naturally occurring radioactive gas formed by the breakdown of uranium in rocks and soil. It is colorless, odorless, and tasteless. In some areas, radon dissolves into groundwater and can be released into the air when water is used. Radon levels outdoors, as well as indoors, are naturally high in many areas in the United States, particularly in areas with significant deposits of granite, uranium, shale, and phosphate.

How might I be exposed to radon?

Breathing indoor and outdoor air is the primary route of exposure to radon. The amount of radon in the air is usually measured in "picoCuries per liter" or pCi/L. The average outdoor air concentration over the entire United States is about 0.4 pCi/L. Indoors, radon gas usually moves from the ground up and migrates into homes and other buildings through cracks and holes in floors, floor drains, cinder block walls, and foundations. Radon levels can be higher in homes that are well insulated, tightly sealed, or built on uranium-rich soil. The average indoor radon concentration in homes is 1.3 pCi/L in the United States.

If wells are drilled in areas where radon is present in rocks or soil, drinking water can become contaminated which can then release radon gas into the air when the water is used for showering and other household uses. The average concentration of radon in public water supplies derived from groundwater sources is about 540 pCi/L. Some wells have been reported to have radon levels over 200,000 pCi/L. Elevated levels of radon in water occur in many areas of the United States, including Virginia. Radon in water contributes very little to the overall presence of radon in indoor air. In general 10,000 pCi/L of radon in water raises the radon levels in air by one pCi/L.

How does radon get into and leave the body?

Radon can enter the body by breathing air or swallowing water containing radon. Less than 10 percent of the inhaled radon remains in the lungs. Some of the radon swallowed with drinking water also passes through the walls of the stomach and intestine.

How can radon affect my health?

Exposure to radon gas, even at high concentrations, does not have any warning signs or irritating effects and does not cause any immediate or short-term health effects. The primary human health effect associated with long-term exposure to radon gas is an increase in the incidence of lung cancer. There is a very small risk of stomach cancer from consuming water containing radon. Most of the risk from radon in drinking water comes from breathing radon released into indoor air from household water uses. **However, the risk posed by radon from drinking water is very small as compared with indoor radon in a home, released from the soil.** Smokers exposed to radon are at 10 times greater risk for lung cancer than are similarly exposed nonsmokers. It is not known how passive exposure to cigarette smoke (second hand smoke) affects the risk for lung cancer in relation to radon exposure.

What levels of exposure to radon have been associated with an increased risk of cancer?

Most evidence of increased risk of lung cancer comes from studies of underground uranium miners. The miners who were exposed to radon levels in air of 50 to 150 pCi/L for more than 10 years died of lung cancer at high rates. These workers were also exposed to other chemicals such as arsenic, silica dust, diesel fumes, and cigarette smoke.

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Does radon cause harmful effects on the fetus?

It is unlikely that the fetus would be affected by the mother's inhalation of airborne radon.

Is the water safe for drinking, taking showers, or washing dishes?

The major risk to health comes from breathing radon in the air, not in drinking water. Radon in water typically contributes to a very small increase in radon concentration in the indoor air of homes. The risk of developing lung cancer from long-term exposure to radon in the air is significantly greater than from drinking water. Radon is not absorbed through the skin. Therefore, drinking water, taking showers, and washing dishes pose little risk to human health.

Is there a medical test to show whether I have been exposed to radon?

Radon in human tissue is not detectable by routine clinical testing. However, some of its breakdown products can be detected in urine and in lung and bone tissue. These tests are of limited value since they cannot determine how much radon one is exposed to, nor can they be used to predict whether one will develop lung cancer or other harmful health effects.

What is the air quality standard for radon?

Currently, there is no standard for radon in outdoor air or indoor air of homes. However, the U.S. Environmental Protection Agency (EPA) recommends corrective actions to reduce the levels of radon below 4 pCi/L in indoor air of homes.

What is the drinking water standard for radon?

At the present time, EPA has not established a Maximum Contaminant Level or MCL for radon in public drinking water. However, EPA has proposed an MCL of 300 pCi/L and a more achievable Alternate Maximum Contaminant Level of 4,000 pCi/L of radon in public drinking water. It may be several years before this standard becomes effective. At 4,000 pCi/L of radon in drinking water, radon level in indoor air will not exceed 0.4 pCi/L.

Should I reduce radon levels in water?

Except in situations where concentrations of radon in water are very high, reducing radon in drinking water will generally not make a large difference in the total radon-related health risks to occupants of dwellings. It is more beneficial to reduce airborne radon levels in a home if the levels exceed 4 pCi/L of air.

What does VDH recommend to protect my health?

VDH recommends testing for radon levels in the indoor air of homes. If the indoor air levels of radon exceed 4 pCi/L, VDH recommends corrective action by the homeowner to reduce radon levels.

Where can my physician or I get more information?

If you have any more questions or concerns regarding the health effects of radon, you may call the Virginia Department of Health, Division of Health Hazards Control, (804) 864-8182, or visit the Web site at www.vdh.virginia.gov/hhcontrol/index.htm

If you are interested in finding a qualified radon service professional to test or mitigate your home, call VDH Radon Hotline at 1-800-468-0138, or visit the Web site at www.vdh.virginia.gov/rad/rhp-radon.asp

The U.S. Environmental Protection Agency's Web site contains news, information, and publications on radon. Visit the EPA Web site at www.epa.gov/radon

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